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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|-------------------------|--------------------------|------------------|
| 09/966,506 | 09/28/2001 | Syed Shoaib Hasan Zaidi | 01 P 14610 US (8055-111) | 5309 |

7590 07/08/2003

Infineon Technologies North America Corp.
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[REDACTED] EXAMINER

DAVIS, WILLIE L

[REDACTED] ART UNIT [REDACTED] PAPER NUMBER

2877

DATE MAILED: 07/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|--------------------------|------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/966,506 | ZAIDI ET AL. |
| | Examiner Willie Davis | Art Unit 2877 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 28 September 2001.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-21 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-21 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 09 January 2002 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The corrected or substitute drawings were received on 1-9-01. These drawings are approved.

The corrected or substitute drawings were received on 8-23-02. These drawings are approved.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (e) the invention was described in-
 - (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
 - (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-3,5,6,9,11,12,13,15,16,19 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Subramanian et al('753).

Claim 1,

Subramanian('753) discloses a method for measuring planarized features on a wafer of a semiconductor device wherein method comprises illuminating features of a wafer(column 2, lines 33-37), detecting reflected light beam with respect to features(column 2, lines 33-40) and analyzing light beam to determine information corresponding to the features(see column 2, lines 42-50).

Claim 2,

Subramanian('753) discloses information comprising sizes(depths, diameters, profiles, critical dimensions and so on) of planarized features(see column 2, lines 43-50).

Claim 3,

Subramanian('753) discloses information comprising grating compositions of planarized features(see Abstract and column 2, lines 34-50).

Claim 5,

Subramanian('753) discloses detecting performed by using scatterometric technique(see Abstract and Figure 10).

Claim 6,

Subramanian('753) discloses detecting performed by a reflectometric technique(see Figure 11).

Claim 9,

Subramanian('753) discloses an analyzing step that maximizes the analysis of optical characteristics based upon a simplified geometry of the planarized features with respect to a geometry of similar, un-planarized features(see column 2, lines 51-67 and column 3, lines 1-15).

Claim 11,

Subramanian('753) discloses a system for measuring planarized features on a wafer of a semiconductor device wherein system comprises an illumination tool for illuminating the planarized features on the wafer(column 2, lines 33-37), a detection tool for detecting reflected light with respect to the planarized features(column 2, lines 33-40) and an analysis tool for analyzing optical characteristics of the reflected light to determine the planarized features(see column 2, lines 42-50).

Claim 12,

Subramanian('753) discloses information comprising sizes(depths, diameters, profiles, critical dimensions and so on)of the planarized features(see column 2, lines 43-50).

Claim 13,

Subramanian('753) discloses information comprising grating compositions of planarized features(see Abstract and column 2, lines 34-50).

Claim 15,

Subramanian('753) discloses a detection tool that employs a scatterometric technique to detect the reflected light(see Abstract and Figure 10).

Claim 16,

Subramanian('753) discloses a detection tool that employs a reflectometric technique to detect reflected light(see Figure 11).

Claim 19,

Subramanian('753) discloses an analyzing tool that maximizes the analysis of optical characteristics based upon a simplified geometry of the planarized features with respect to a geometry of similar, un-planarized features(see column 2, lines 51-67 and column 3, lines 1-15).

Claim 21,

Subramanian('753) discloses a method for measuring planarized features of a wafer of a semiconductor device whferein method comprises illuminating the planarized features on the wafer,detecting a reflected light with respect to the planarized features and analyzing optical characteristics of the reflected light to determine information corresponding to the planarized features(see Abstract and column 2, lines 30-50),

wherein analyzing step comprises maximizing an analysis of the optical characteristics based upon a simplified geometry of the planarized features with respect to a geometry of similar, unplanarized features(see column 2, lines 51-67 and column 3, lines 1-15)

and maximizing the analysis of the optical characteristics based upon a reduction in complexity of the planarized features due to a similarity in refeactive indexes corresponding to a bulk silicon substrate and a poly silicon fill of the semiconductor device(see Figure 17).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4,7,8,14,17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Subramanian('753) in view of Vurens('627).

Subramanian('753) substantially teaches the claimed invention except that it does not show detecting by polarimetric or ellipsometric technique.

Vurens('627) shows that it is known to provide detecting by polarimetric or ellipsometric technique for optical measurement of planarized features(see Abstract and column 1, lines 37-47).

It would have been obvious to combine the device of Subramanian('753) with detection techniques of Vurens('627) for the purpose of using various methods to measure and verify accuracy of measurements for thin film layers and surfaces.

Allowable Subject Matter

Claims 10 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

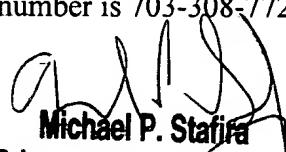
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Willie Davis whose telephone number is 703-305-5169. The examiner can normally be reached on 9:30am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 703-308-4881. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-0956 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-7722.

Willie Davis

June 23, 2003


Michael P. Stafira
Primary Patent Examiner
Technology Center 2800